THE SCIENCE OF LABOR

By E. BRAMESFELD

During the last hundred years or so, the independent craftsman who made his raw material into a finished product has been turned into a factory worker. For that reason a science of labor has now evolved whose object it is to study human reaction to industrial developments and how man can be made to work most efficiently under mass-production conditions. The author of this article is a doctor of engineering and by profession a labor psychologist, in which capacity he is a member of the German Reich Committee for Labor Studies.

This study differs in many respects from previous works along these lines. Hitherto, especially in America, the labor problem was regarded from the point of view of capitalism, which saw in the workman something which differed from the machine only in that it could do something which the machine could not. Dr. Bramesfeld, however, takes an entirely different attitude. We need hardly add that, at a time in which a world war demands in all countries a maximum of efficiency with a minimum of labor, the problem of labor is one of outstanding importance.—K.M.

MAN IS NOT A MACHINE

THERE are fundamental differences between the work done by men and that done by machines. Even if we entirely disregard mental work—which is hardly possible, as there is no such thing as purely physical work—the human body cannot be treated as a motor.

While two machines of the same kind produce the same quantity and quality of work, there are no two human beings exactly alike. One man works at his lathe with gusto, another does it ponderously, painstakingly. One man chooses this, the second another sequence in the intermediate steps of his work and in this way develops his own particular skill. We may draw on athletics for comparison: there we find entirely different styles being used for record-breaking achievements, and individual successful athletes who have developed their own style being copied by others.

Not only is the manner in which each man works different—even the manner in which the same man works at the same job is subject to ups and downs. These ups and downs are a natural characteristic of human labor, and hence it is unnatural to demand that a man should completely adapt his working tempo to the mechanical rhythm of a machine.

Observations such as the following have frequently been made. The work in a factory was split up into simple, constantly repeated manipulations and distributed in such a way that one man took up where the last left off. A condition was hereby achieved in which the work could be done almost automatically and hence at a very regular speed. But at the same time the factory management noticed a certain dissatisfaction among many of its workers with the monotony, the "mechanical" nature of the new process. Thus that which from the point of view of mechanical efficiency had seemed practical—namely, the assimilation of human work to that of the machine—turned out not to be equally advantageous when seen from the point of view of the workman.

INDIVISIBLE LABORER

Since there is no single partial process in the human labor process which is not dependent on and determined by the physical and mental state of the entire human being as an indivisible whole, we cannot detach a certain working process and regard it independently of the laborer. We must regard the laborer and his work as a whole.

This relationship of human work with all the physical and mental conditions in-

herent in man cannot be plucked apart by even the most skillful organization of labor in order to isolate something like "labor energy" per se out of this whole. This is proved, among other things, by many industrial accidents. These also frequently show quite clearly that there is a connection between the private life of a laborer and his work. His troubles at home have just as much influence on his work as the flourishing of his garden, the weather, or prices.

It would be wrong to regard it as a desirable final goal to have men working "like a machine." The advantage of extreme skill in a partial manipulation is offset by a loss: a loss in the laborer's adaptability for other work. The more a man has become accustomed to a certain way of thinking or moving, the more practice does he require to adapt himself to a new type of work. Someone who has learned and become used to employing a tool wrongly, generally finds it far more difficult to learn the proper use of it than a man who has never used the tool before. Someone who has for years been doing the same mechanical job finds it difficult —and with advancing age almost impossible—to adapt himself to another job. Adaptable workers can remain adaptable only if they are not given work too limited in scope. In other words, the division of labor must not be carried too far, and the worker must be allowed to change his work now and again, even in a mass-production process.

Thus we may sum up our observations in the following rule: utmost efficiency in mechanical skill must be paid for with a loss in adaptability on the part of the worker. And vice versa: people who by nature do not show much adaptability can be made to work with the greatest degree of efficiency by extreme specialization in their type of work.

DANGEROUS MONOTONY

Modern industrial development has led to a far-reaching splitting up of the various stages of manufacture and consequently to a certain uniformity of work. But we must try to prevent this uniformity of work leading to a feeling of monotony. Uniformity of work and monotony are as little identical as, for instance, cold and shivering. Uniformity of work is an objective technical fact; monotony is a subjective expression of the mental effect of uniformity.

Our everyday life shows us that we by no means always feel uniform activity to be a hardship. Take the athlete, who runs dozens of times every day around the cinder track in his training. His activity is certainly uniform, as is that of a woman knitting or embroidering. Yet they are no more "exhausted" than countless men and women in factories who have for years been carrying out the same manipulation in manufacture or packing. On the other hand, it is a fact that many people do suffer from a feeling of monotony after a short period of such activity.

The existence of monotony as a feeling of exhaustion and consequently as a handicap to work is related less to the type of work than to the natural susceptibility of the worker toward uniformity. This susceptibility is a factor of considerable importance in the qualification of a worker. In practice there are three fairly pronounced groups of natural aptitude in this regard.

The first group can do uniform work without feeling in any way burdened. As a rule, these people are not very adaptable and have no desire for any change in their work or for learning any new type of work. They feel their speciality to be important and prefer this uniformity. Often they display a sort of sporting pride in their work, thereby achieving a high output. These people are qualified for uniform work.

The second group consists ot those who are extremely susceptible toward monotony. They have a strong desire for change and display feelings of monotony even when working at a job which to an observer may seem comparatively varied. These people are by nature generally adaptable and versatile but sometimes just restless and requiring diversion. They are not suited for uniform work.

The people of the third group do not by any means find satisfaction in mechanically uniform work itself but can carry it out without discomfort as long as they can have some entirely outside distraction while doing such mechanical work. They talk or sing at their work or listen to the radio; they build castles in the air or make plans for their leisure time. Experience has shown that many women belong to this group. This group is conditionally qualified for uniform work.

STIMULI

All phenomena of monotony are based on a common cause. This is the human necessity for stimuli, which varies according to each individual. Just as insipid food causes us to lose our appetite, so our physical and mental organism resists other unstimulating conditions of life.

Thus the practical task facing us is, on the one hand, to create stimuli for working and, on the other, to give people that type of work which their individual natural requirement for stimuli enables them to carry out satisfactorily. The athlete we took as our example as well as the worker belonging to the first group—described as being qualified for uniform work—are stimulated by the constant repetition of their own movements as well as by the idea of a goal to be achieved (which goal may be simply the remuneration coming to them). They need no added stimuli.

The second of the three groups requires the utmost in stimuli, it needs added stimuli in the form of change of work, movement, adjustment. The people of the third group receive the necessary stimuli not from the work itself but from their environment, their private life, their imagination.

However, we must beware of providing stimuli which have a purely negative effect on feelings as, for instance, only urging, or exaggerated supervision and driving, or scolding. Stimuli of this kind quickly cause exhaustion. A positive, refreshing effect, however, is caused by such measures as change in work, a friendly attitude and helpfulness on the part of the superior, a sound regularity in the speed of work based on thorough studies of the worker's capacity, and the granting of a certain amount of independence and responsibility, within the limits of which the worker may have a justified feeling of being entitled to decide for himself how he will apply his energy and how he will do his job. To this may be added the effective stimulus of showing the worker what his particular work means within the whole manufacturing process by giving him an idea of the entire plant and its production.

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A careful study of the qualifications of every single worker is essential for the reason that it affects not only the individual worker but also the whole group in which he works. The members of a working group should fit so well together in their work that the group forms, so to speak, a new organic whole. Without necessarily being ill-natured or antisocial, some workers are fully efficient only when they can do their jobs alone. When working in a group they are distracted, cause friction, and may even destroy the efficiency of the rest of the group. Hence nonqualification by no means always refers to professional skill but may be caused by general human characteristics. Active, ambitious natures, for instance, often prefer to work alone, unless they can become leaders in a group.

These reflections, representing as they do only a small sector of the field of labor psychology, go to prove the correctness of the thesis we set up at the beginning of this article, namely, that man is not a machine. The more a man is treated as a human being, the better he works.